CLAIMS

What is claimed is:

1. A method of controlling a fusing temperature of a fusing roller in an electrophotographic imaging apparatus, the fusing roller having a cylindrical roller, a heater heating the cylindrical roller, and a rubber layer formed on a surface of the cylindrical roller with a predetermined thickness, the method comprising:

determining whether a predetermined new power control period starts;

upon determining that the new power control period starts, calculating a power supply ratio corresponding to a power to be supplied to the heater during the new power control period with respect to a maximum power that can be supplied to the heater;

upon determining that the calculated power supply ratio is greater than zero, supplying the power to the heater during the new power control period according to the power supply ratio; and

upon determining that the calculated power supply ratio is not greater than zero, repeating the operations of determining whether the predetermined power control period starts, calculating the power supply ratio, and supplying the power to the heater,

wherein the power supply ratio is calculated by adding a predetermined offset value β to a control value that is a product of a predetermined coefficient α and a subtraction of a measured temperature of the fusing roller from a target fusing temperature, and the offset value β is smaller than or equal to a ratio of a power supply with respect to the maximum power supplied to the heater for the new power control period to maintain the measured temperature of the fusing roller at the target fusing temperature when the fusing temperature is around the target fusing temperature.

2. The method of claim 1, wherein the offset value β is determined according to the target fusing temperature of the fusing roller.

3. The method of claim 1, wherein the coefficient α is determined according to at least one of a quality of a sheet of paper, a printing speed, and whether a printing mode is color printing.

4. The method of claim 1, wherein the supplying of the power corresponding to the power supply ratio to the heater during the new power control period comprises:

supplying the power to the heater according to a duty control.

5. The method of claim 1, wherein the supplying of the power corresponding to the power supply ratio to the heater for the new power control period comprises:

supplying the power to the heater according to an on-off control.

6. A method of controlling a fusing temperature of a fusing roller in an electrophotographic imaging apparatus, the fusing roller having a cylindrical roller, a heater heating the cylindrical roller, and a rubber layer formed on a surface of the cylindrical roller with a predetermined thickness, the method comprising:

determining whether a predetermined new power control period starts;

upon determining that the new power control period starts, determining whether a measured temperature of the fusing roller is lower than a target fusing temperature;

upon determining that the measured temperature is lower than the target fusing temperature, calculating a power supply ratio corresponding to a power to be supplied to the heater during the new power control period with respect to a maximum power that can be supplied to the heater;

supplying the power corresponding to the power supply ratio to the heater during the new power control period;

upon determining that the new control period does not start yet or if the measured temperature is not lower than the target fusing temperature, determining whether a predetermined new offset control period starts; and

upon determining that the new offset control period starts, calculating an offset power supply ratio corresponding to the power to be supplied to the heater during the new offset control period, and supplying the power corresponding to the calculated offset power supply ratio to the heater.

7. The method of claim 6, wherein the power supply ratio is calculated by adding a predetermined offset value β to a control value that is a product of a predetermined coefficient α and a subtraction of the measured temperature from the target fusing temperature.

8. The method of claim 6, wherein the offset power supply ratio is smaller than or equal to a ratio of power supply with respect to the maximum power that is supplied to the heater for the new power control period to maintain the measured temperature of the fusing roller at the target fusing temperature when the measured temperature reaches the target fusing temperature.

9. The method of claim 6, wherein the offset power supply ratio is determined according to the target fusing temperature of the fusing roller.

10. The method of claim 6, wherein the predetermined coefficient α is determined according to at least one of a quality of a sheet of paper, a printing speed, and whether a printing mode is color printing.

11. The method of claim 6, wherein the power corresponding to the offset power supply ratio is supplied to the heater according to a duty control during the offset control period.

12. The method of claim 6, wherein the power corresponding to the offset power supply ratio is supplied to the heater according to a phase control during the offset control period.

13. A method of controlling a fusing temperature of a fusing roller in an electrophotographic imaging apparatus, the fusing roller having a cylindrical roller, a heater heating the cylindrical roller, and a rubber layer formed on a surface of the cylindrical roller with a predetermined thickness, the method comprising:

determining whether a predetermined new power control period starts;

upon determining that the new power control period starts, calculating a power supply ratio corresponding to a power to be supplied to the heater during the new power control period with respect to a maximum power that can be supplied to the heater;

determining whether the calculated power supply ratio is greater than zero;

upon determining that the calculated power supply ratio is greater than zero, supplying the power corresponding to the power supply ratio to the heater during the new power control period;

upon determining that the new power control period does not start yet or if the calculated

power supply ratio is smaller than or equal to zero, determining whether a predetermined new offset control period starts; and

upon determining that the new offset control period starts, calculating an offset power supply ratio corresponding to the power to be supplied to the heater during the new offset control period and supplying the power corresponding to the calculated offset power supply ratio to the heater.

14. The method of claim 13, wherein the power supply ratio is calculated by adding a predetermined offset value β to a control value that is a product of a predetermined coefficient α and a subtraction of a measured temperature from a target fusing temperature.

15. The method of claim 13, wherein the offset power supply ratio is smaller than or equal to a ratio of the power supply with respect to the maximum power that is supplied to the heater for the new power control period to maintain a temperature of the fusing roller at a target fusing temperature when the temperature of the fusing roller reaches the target fusing temperature.

16. The method of claim 13, wherein the offset power supply ratio is determined according to a target fusing temperature of the fusing roller.

17. The method of claim 13, wherein the predetermined coefficient α is determined according to at least one of a quality of a sheet of paper, a printing speed, and whether a printing mode is color printing.

18. The method of claim 13, wherein the power corresponding to the offset power supply ratio is supplied to the heater according to a duty control during the offset control period.

19. The method of claim 13, wherein the power corresponding to the offset power supply ratio is supplied to the heater according to a phase control during the offset control period.

20. A method of controlling a fusing temperature of a fusing roller in an electrophotographic imaging apparatus, the fusing roller having a cylindrical roller, a heater

heating the cylindrical roller, and a rubber layer formed on a surface of the cylindrical roller with a predetermined thickness, the method comprising:

determining whether a predetermined new power control period starts;

upon determining that the new power control periodstarts, determining whether a measured temperature of the fusing roller is lower than a target fusing temperature;

turning on the heater during the new power control period if the measured temperature is lower than the target fusing temperature, and turning off the heater during the new power control period if the measured temperature is greater than or equal to the target fusing temperature;

upon determining that the new power control period does not start yet, determining whether a predetermined new offset control period starts; and

upon determining that the new offset control period starts, calculating an offset power supply ratio corresponding to a power to be supplied to the heater during the new offset control period and supplying the power corresponding to the calculated offset power supply ratio to the heater.

21. The method of claim 20, wherein upon determining that the new power control period does not start yet or if the heater has been turned off, it is determined whether the predetermined new offset control period starts.

22. The method of claim 20, wherein the offset power supply ratio is smaller than or equal to a ratio of a power supply with respect to the maximum power that is supplied to the heater for the new power control period to maintain the measured temperature of the fusing roller at the target fusing temperature when the measured temperature of the fusing roller reaches the target fusing temperature.